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ABSTRACT

Multigrade classes have been recognized as part of elementary education for many years, but their special needs have been largely ignored. This manual focuses on the survey research that should predate the design of instructional management strategies in multigrade classrooms. It describes rapid and reliable ways to collect information about the numbers and locations of schools, student achievement in multigrade classes, information about teachers, and profiles about communities in which multigrade classrooms are found. The document was drafted for the Learning Technologies for Basic Education project, and its ideas were tested in Costa Rica, a country that already knew the dimensions of its multigrade education needs. Needs assessment begins with determining whether a plan is needed for national, district, or school levels. A guide is presented for developing a profile for each of these levels, and a guide for summary analysis and interpretation follows. The rapid appraisal methodology brings a first round of insights into the implementation of multigrade teaching in a country or region. (SLD)

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Multigrade Teaching Rapid Appraisal Procedure

By

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January 1995

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FOREWORD

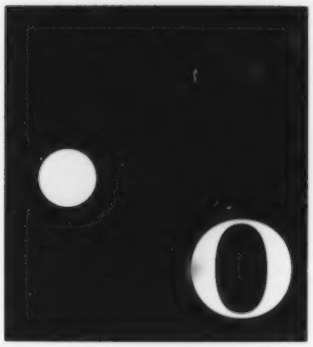
Multigrade classes have been recognized as a large part of primary education systems for decades, but their special needs have been almost completely neglected in most countries. Teachers have been trained and instructional materials developed as if every class was but a single grade. Individual teachers have used remarkable improvisational and creative skills in manufacturing responses to managing classes of two or three, sometimes six grades at the same time. But education systems have virtually denied their existence.

This manual focuses on the survey research that pre-dates the design of instructional management strategies in multigrade classrooms. Dean Nielsen has designed a rapid response strategy to the questions such as: "How important is this issue? What kind of problems do multigrade schools pose, how many are there, where are they?" This manual describes rapid and reliable ways to collect information about numbers and locations of schools, student achievement in multigrade classes, information about teachers and profiles about communities in which multigrade classes are found.

LearnTech, the project that sponsored this manual, generally has sought ways in which instructional strategies can be more active, imaginative, and effective. To this end, it collaborated with teachers and the Ministry of Education in Costa Rica to test new ideas for multigrade classrooms. But it is noteworthy that LearnTech found a receptive audience in the Ministry to embark on planning for innovation. Why? Because Costa Rica knew how many schools it had with one teacher, the number with two teachers, which schools operated a morning shift for the first three grades and afternoon shifts for Grades 4-6, and so on. In other words, Costa Rica knew at least some of the dimensions of its problem and was now interested in working with LearnTech to design a response.

So, although LearnTech has focused mainly on designing innovative instructional strategies, we recognize the importance of the information that might be obtained from procedures contained in this rapid appraisal manual for multigrade classes and are proud to have sponsored it.

Mike Laflin
Director
Learning Technologies for
Basic Education Project
(LearnTech)



OVERVIEW

OBJECTIVE AND USE OF MGT-RAP

The following is a methodology for examining the implementation of multigrade teaching in an educational system. The methodology is meant to provide policy makers and program developers with a basic understanding of the ways in which multigrade teaching (a teacher's management of more than one grade level at the same time) is being conducted. It will result in a profile of strengths and weaknesses of MGT at various levels of the educational system, which can be used to determine what kind of interventions (if any) might be needed in order to improve the quality of basic education in remote areas where MGT is prevalent.

GENERAL APPROACH

The methodology is modelled on the rapid (rural) appraisal approach, which has been defined as "a process of learning about (rural) conditions in an intensive, iterative and expeditious manner" (Grandstaff, Grandstaff, and Lovelace, 1987). The methodology has the following general characteristics:

Multilayered. The methodology provides information relevant to MGT management and development at several levels, from the national to the school level. The exact number of layers will depend on the complexity of the education system. The various layers will be interrelated through the process of "*progressive focusing*."

Participatory and Collaborative. The methodology involves actors in the local educational system (managers and teachers) as partners with outside researchers (e.g., from a government research and evaluation office or institution of higher education).

Field-based. The methodology involves collection of data, information, and perceptions from school personnel and local educational officers (in addition to using relevant statistics and reports already in existence).

Combines Quantitative and Qualitative Data Analysis. Quantitative data analysis is used to sketch out basic profiles of schools and districts where MGT is conducted; qualitative information (perceptions and histories of MGT participants) is used to create an understanding of how things work (or don't work) and why. The qualitative data collection uses *informal or semistructured questioning techniques* with groups and individuals.

Employs User-friendly Reporting and Display Techniques. MGT-RAP relies heavily on graphics and mapping procedures to communicate results.

MULTIGRADE TEACHING RAP COMPONENTS

Guide for National (and Provincial, if needed) MGT Profile. This demonstrates the national context of MGT through the generation of maps showing the distribution of various modes of multigrade teaching and school performance. It draws on existing data and uses indicators such as numbers of classes (or grades) per teacher, students per teacher, and student achievement on standardized tests.

Guide for Regional MGT Profile. This procedure maps the MGT schools in a region and adds various geographical information, such as terrain, transportation/ communications infrastructure, economic, and socio-cultural environment (e.g., language and ethnic groups).

Guide for MGT School Profile. This comes from semistructured interviews and observations covering sub-topics considered by appraisal teams to influence the quality of education in MGT schools, such as:

- teachers by origin, current residence, training (MGT and general), experience (MGT and general), current teaching assignment and load;
- school organization;
- curriculum and schedule;
- resources and resource use;
- MGT routines and local innovations;
- school problems and needs.

This profile relies on personal histories written by teachers who are widely recognized to be committed, innovative, and successful in the MGT setting.

Guide for Summary Profile Analysis and Interpretation. This demonstrates how to summarize all of the above profiles in order to produce conclusions and recommendations concerning future interventions for improved MGT implementation.

GUIDE FOR NATIONAL/PROVINCIAL LEVEL MGT PROFILE

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GENERAL DESCRIPTION

This level of rapid appraisal will reveal the current status of multigrade teaching (MGT) implementation at the national and/or provincial level. It will show where MGT is being implemented and describe some of the general features of MGT schools. It will be based on existing data and will use indicators such as number of grades per school, classes/classes per teacher, students per teacher, classrooms per school, grades per classroom, and student performance on standardized tests. The profiles will be portrayed in the form of maps, tables, and graphs.

Profiles at this level will allow analysts to identify areas where MGT is the most prevalent (useful in determining where detailed appraisals should be focused), and to initiate hypothesis-building concerning the reasons for different MGT types and performance levels (based on comparisons among geographical areas).

For countries with large populations and important political subdivisions at the provincial or state level (e.g., China, India, Indonesia, and Brazil), it would be advisable to do profiles at two levels, national and provincial. For very large countries it may not be practical to profile *all* provinces; in that case it would be advisable to select a subset of provinces representing different geographical, economic, or cultural areas. For small countries a national level profile may be sufficient. The procedure for profile development is basically the same at both levels.

A critical assumption in profile building at this level is that recent and accurate basic data on schools, teachers, and students are available at the national and/or provincial level. If this assumption does not hold, it will be necessary to compile such data first. The compilation and subsequent manipulation of this data is best done by joint teams of investigators, including members from the office initiating the rapid appraisal, as well as those who manage school statistics at the national and provincial levels.

DATA COMPILATION

This profile requires school level data for *all* of the country's primary or elementary schools. (If there are significant numbers of private schools, the data compilation should cover both public and private schools; the two kinds of schools could be analyzed both separately and together.)

The following data points will be needed for each school:

- number of classroom teachers (full time), including the principal if the principal also teaches a class;
- number of grades taught in the school;
- number of classes;
- number of students;
- the most recent scores on standardized tests (school average);
- the most recent school drop out records (percent of total enrollment);
- records on the proportion of last year's grade 1 cohort entering school (if available).

By *classroom teachers*, we mean those who have the principal responsibility for at least one class. Part-time teachers or teachers of specialty subjects such as music, religion, and physical education need not be included in this compilation (unless the latter are also classroom teachers).

By *grade*, we mean level (roughly corresponding to age) — sometimes called "standard" — through which students progress, such as preschool (or kindergarten), first, second, third, fourth, fifth, and sixth. The point is to determine how many grades or standards are taught at a particular school.

By *class*, we mean a grouping of students that is generally kept together as a unit during the school year. Some schools are large enough that they have more than one grouping or class per grade. Others have just one class per grade; yet others have more than one grade represented in a class (i.e., a multigrade class or classroom).

Using computer files or raw data, these data points could be compiled into spreadsheet format in which individual schools are placed in the rows and the data for the above data points in the columns. (See Exhibit 1a for an example.)

For Profiles Covering Both National and Provincial Levels. For each province, one should make a separate spreadsheet for each political sub-division (county or district, etc, in this guide referred to as "district") (Refer to Exhibit 1a). Later data will be aggregated at the provincial and national levels.

For Profiles Covering Only the National Level. A separate spreadsheet for each relevant political sub-division of the country should be made.

Exhibit 1a: School Data for the Province of Hopewell: Midland District

School	Classroom Teachers	Grades Taught	Classes	Students	INDEXES Classes/ Teacher	INDEXES Grades/ Teacher	INDEXES Students/ Teacher
PS #1	10	7	10	380	1.0	1.0	38.0
PS #2	10	7	10	350	1.0	1.0	35.0
PS #3	9	7	9	350	1.0	1.0	38.9
PS #4	7	7	7	280	1.0	1.0	40.0
PS #5	9	6	9	315	1.0	1.0	35.0
PS #6	9	6	9	310	1.0	1.0	34.4
PS #7	8	6	8	300	1.0	1.0	37.5
PS #8	6	6	6	280	1.0	1.0	46.7
PS #9	6	6	6	250	1.0	1.0	41.7
PS #10	4	6	6	180	1.5	1.5	45.0
PS #11	4	6	6	120	1.5	1.5	30.0
PS #12	4	6	6	100	1.5	1.5	25.0
PS #13	3	6	6	85	2.0	2.0	28.3
PS #14	3	6	6	60	2.0	2.0	20.0
PS #15	3	5	5	75	1.7	1.7	25.0
PS #16	3	5	5	50	1.7	1.7	16.7
PS #17	3	5	5	45	1.7	1.7	15.0
PS #18	2	4	4	80	2.0	2.0	40.0
PS #19	2	4	4	50	2.0	2.0	25.0
PS #20	1	3	3	60	3.0	3.0	60.0
Average	5.3	5.7	6.5	186	1.5	1.5	33.9

DEVELOPMENT OF INDEXES

From the data points, certain indexes can be constructed which form the basis of the profiles that follow. The following 3 indexes will be used in the next section. It would be advisable to compute them and list the results on the spreadsheet, as has been done in Exhibit 1a.

1. Classes per teacher (point "c" / point "a")
2. Grades per teacher (point "b" / point "a")
3. Students per teacher (point "d" / point "a")

CREATION OF PROFILES

The national/provincial profiles demonstrated here map the *prevalence* of MGT (the proportion of schools in a region using MGT), and the distribution of MGT *types* and MGT *performance levels*.

MGT Prevalence. MGT Prevalence is operationally defined as the proportion of schools using multigrade teaching. It is essentially a reflection of Index 2 above (grades per teacher). Before determining this, it is necessary to set a "cut-off point" defining a MGT school. Obviously a school with a grade to teacher ratio of near 1 is practicing no or little MGT. A school with a grade to teacher ratio of 2 is one where the average teacher manages two grades. A ratio of around 1.5 reveals a school in which some teachers manage more than one grade and some a single grade only. In this example, we use 1.5 as the "cut off point," accepting schools in which at least half of the teachers are managing more than one grade. (Others may choose to use a cut-off of 2.0, counting only schools in which the average load is at least two classes per teacher).

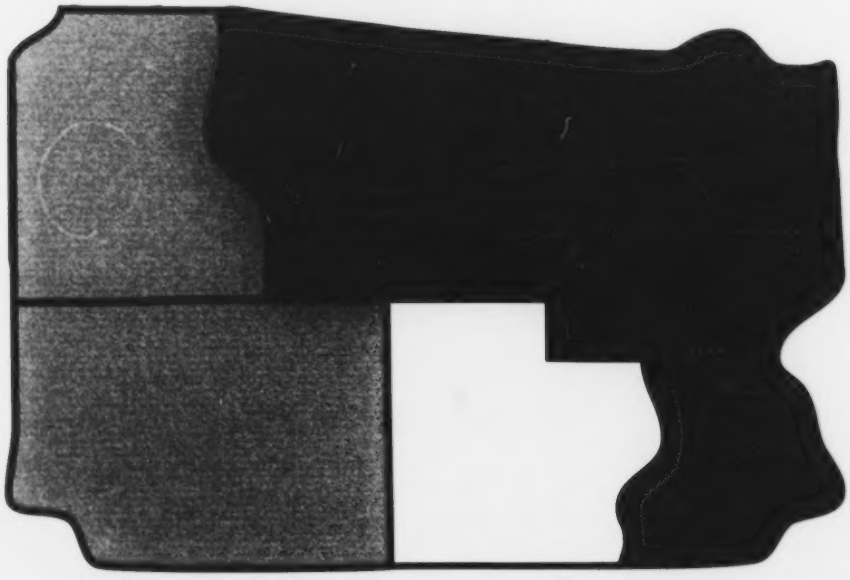
Once the cut off point is set, the investigator refers to the district-level tables (or spreadsheets) of index values and counts the number of schools per district that "qualify" as MGT schools. The number divided by the total number of schools in the district indicates the *prevalence* of MGT in the district. For analysis at the national level, school data should be aggregated at the provincial level, so that the prevalence at that level can be computed.

For example, in Exhibit 1a, which shows data points and index values for the Lowland District of the fictitious Province of Hopewell, the number of MGT schools is determined to be 11 of 20 (using the cut-off of 1.5 grades per teacher). The prevalence of MGT in that district is thus 55%. If there were spreadsheets for all of the districts in the province, one could quickly count the MGT schools in the province. Dividing that number by the number of schools in the province would yield the prevalence of MGT at the provincial level.

Mapping Prevalence. It is often illuminating to display MGT prevalence on a map. To do this take at the provincial level, investigators should make an outline of the province showing the boundaries of sub-divisions (which are called districts in this example). This can be done by hand or by computer. Each sub-division is colored according to the prevalence of MGT.

Exhibit 1b represents an example of mapping the prevalence of MGT across a province. In this example, the higher the prevalence the warmer the color (the range going from light blue (0-19%) to red (60-79%). This gives a vivid representation of where in the province multigrade teaching is the most prevalent. There is little prevalence of MGT in the western part of the province, some in the central part, and a considerable amount (involving 2/3 to 3/4 of all schools using) in the eastern districts. *An obvious question for the rapid appraiser would be: What distinguishes the eastern provinces from the others causing MGT prevalence to be so much higher?*

Exhibit 1b: The Prevalence of Multigrade Teaching: Exemplary Province



Key: Proportion of Schools doing Multigrade Teaching

0-19% 20-39% 40-59% 60-79%

MGT Type. The limitations of the data in the present example mean that classification of MGT by type must be simple. The typology below uses a combination of the indexes Grades per Teacher and Students per Teacher. Grades per Teacher is conceived as an indicator of the *curricular complexity* of the teacher's job (the number of subjects and levels to be covered at the same time), and Students per Teacher as an indicator of *student load* (the number of students who need to be attended to). In small rural schools the teacher's job might be quite complex in the sense of covering many levels at the same time, but low in student load. Thus the overall *teacher burden* might be quite manageable. In other locations, both complexity and student load may be high, creating a burden for the teacher. The intersection between the two indexes leads to the following four categories of teacher burden:

		Students per Teacher	
		Low	*High*
Grades per Teacher	*Low*	Simple/ Lo Load	Simple/ Hi Load
	High	Complex/ Lo Load	Complex/ Hi Load

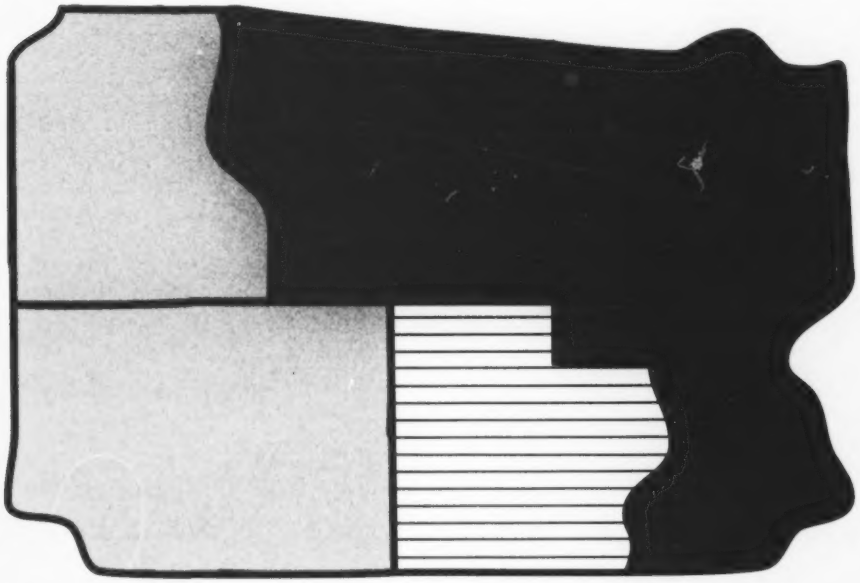
Example. Simulated data from the fictitious province of Hopewell shows the following about schools in its three districts:

District	Grades/ Teacher	Students/ Teacher	Teacher Burden Category
Lowland	1.5	33.7	Simple/Lo Load
Midland	3.1	24.0	Complex/Lo Load
Lake Hope	2.6	54.3	Complex/Hi Load

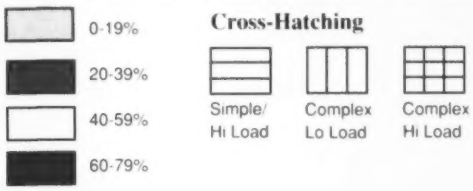
To use the above typology on these data, it is necessary to determine high and low cut-off points for the indexes. We set the cut-off for grades per teacher at 2.0. Schools at or below that are considered to have relatively *simple* curricular loads (no more than two levels per teacher on the average, with some to most having only one); whereas those above two are considered to have *complex* curricular loads. Concerning student load, the cut-off point was set at 40, which is high by developed country standards but the norm in many developing countries. Forty and under is considered low student load, over 40 high. The districts of Hopewell Province have been classified accordingly (see the fourth column of the above table).

Mapping MGT School Type. School type may be mapped in a way similar to MGT prevalence. In fact, the same maps could be used. A symbol for different categories of *teacher burden* could be developed and placed as an overlay on the color-coded sub-divisions. In this example, the map uses "cross-hatching." Vertical lines represent Simple/Hi Load; horizontal lines, Complex/Lo Load; and both horizonal and vertical lines, Complex/Hi Load. No cross-hatching at all represents Simple/Lo load. Exhibit 1c shows the cross-hatchings indicating the different categories of teacher burden.

Exhibit 1c: The Prevalence of Multigrade Teaching: Exemplary Province



Key: Proportion of Schools doing Multigrade Teaching



MGT Performance Levels. In this national-level appraisal, it would be desirable if various indicators of school performance already existed and were available at the central (or at least provincial) level. The kinds of indicators that might be considered are:

- results of national assessments covering one or more grades;
- school leaving examination results (aggregated at the school level);
- results of secondary school entrance examinations (especially if given during the last year of primary school);
- results of national-level research studies of student achievement;
- results of national-level research concerning student growth in the social and affective domains;
- the proportion of school-age children actually enrolled in school (participation rates);

- the proportion of a cohort of grade 1 children actually enrolled in a certain year;
- student drop-out rate (the proportion not continuing in school from one year to the next);
- student repetition rate (the proportion of all students repeating a grade during a certain year);
- graduation rates (the proportion of children entering primary school who graduate).

> Student growth in social skills, social maturity, academic self-reliance, motivation, and community-mindedness are often overlooked and rarely measured at the national level. This is unfortunate as far as MGT is concerned, since it is in these domains that this approach to learning often excels.

Again, it is better when more than one indicator of performance is used. In this example, three indicators were selected: (a) the "participation rate" of the grade 1 cohort; (b) the average score on a primary school leaving exam (by school), and (c) the school drop-out rate for a certain year. If it turns out that there is no valid, standardized measure of student achievement in use nation-wide, it is *not* recommended that the investigators attempt to construct and administer one (after all, this is a rapid appraisal). Instead, it is suggested that appraisers locate or construct some simple, quick tests that they can apply in selected schools during the school-level profile exercise (See Guide to School-Level MGT Profile that follows).

Analyzing School Performance Indicators. All of these indicators need to be aggregated first at the district and then at the provincial levels. At that point two kinds of comparisons can be made:

- a comparison between MGT schools and regular schools in the same district/province (controlling for school socio-economic status, if possible);
- a comparison of MGT school performance across the various districts within the same province and across provinces.

Graphing School Performance Indicators. Since most performance indicators use data of an interval type (can be represented as numbers on an even scale), the results can be communicated in the form of tables and graphs. Exhibits 1d and 1e make the above comparisons in tabular and graphic form.

Performance Levels for MGT and Regular Schools in Hopewell Province
by District

Performance Indicator	Lowland		Midland		Lk Hope		Province	
	MGT	*Reg*	*MGT*	*Reg*	*MGT*	*Reg*	*MGT*	*Reg*
Average Participation rate in Grade 1	95	110	90	91	79	87	88	96
Average Score on Primary School Leaving Examination	56	72	48	46	23	39	42.33	52.33
Average Drop-out Rate for 1992-93	6	4	6	7.5	18	12	10	7.833

Exhibit 1d

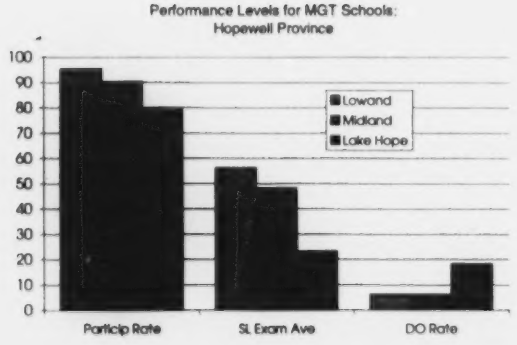
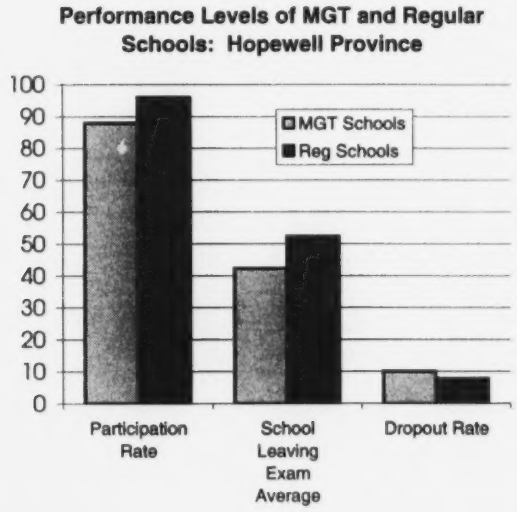


Exhibit 1e

This example, over-simplified for the sake of clarity, reveals that MGT school performance is generally worse than that in comparable conventional schools, except in Midland district where the performance in both kinds of schools is roughly equivalent. It also shows a difference in the performance of MGT schools across the three districts.



OVERALL PROFILE AND CONCLUSION

Once the performance indicators have beensummarized, it is advisable to compile all of the profiles, those for *prevalence, school type,* and *performance,* into an overall profile. This can be done through the use of a profile matrix (see Exhibit 1f), one for each district (at the provincial level) and one for the nation as a whole (in which provinces are the "units"). In this example, based on hypothetical data from Hopewell Province, not only the various indicators derived above are included, but also some general contextual variables from the three districts.

Profile with Respect to Multigrade Teaching: Hopewell Province

Province/ District	Prevalence of MGT	School Type	Performance Level of MGT Schools	Major Geographic Characteristics	Population Density	Dominant Ethnic/Lang. Groups	Principal Economic Activities	Income Per Capita *
1. Lowland District	16%	Simple/ Lo Load	Part rt: 95% SL Exam: 56 DO rt: 6%	Lowland coastal area	High in urban areas; some coastal villages	Mainstream culture/language coastal minority & language	Coast agriculture; fishing; industry	$1,200
2. Midland District	55%	Complex/ Lo Load	Part rt: 90% SL Exam: 48 DO rt: 6%	Inland river system; rainforest	Low	Forest dwellers minority dialect	Subsistence agric; forest products	$400
3. Lake Hope District	69%	Complex/ Hi Load	Part rt: 79% SL Exam: 23 DO rt: 15%	Upland lake area; surrounded by mountains	High around lake and in some mountain villages	Mainstream cult/ lang around lake; some coastal minority/dialect; hill tribes/ indig. language	Lake fishing; trading; subsistence agriculture (in mountains)	$650

*Or other prosperity indicator

Exhibit 1f

Once such matrices have been completed for all provinces (or any sub-set which might have been selected), it would be appropriate to convene a workshop to which all investigators and stakeholders (at the regional and national levels) have been invited. The task in the workshop would be to examine the various profiles and to look for significant patterns. In particular, the workshop might address the following questions:

- What do districts/provinces with a high incidence of MGT seem to have in common?
- What do districts/provinces having particular types of MGT schools have in common?
- What do high performance districts/provinces have in common? low performance districts/provinces?

- Are there any recognizable differences between areas having complex/low load schools and those having complex/high load?
- What preliminary hypotheses concerning the determinants of school type/school performance are suggested by the profiles?
- Are there any findings which appear to run counter to conventional wisdom?
- What do the profiles suggests concerning the most appropriate locations for further investigations?

The results of the rapid appraisal at this level can be used to select locations for more detailed analysis and to generate new questions and hypotheses concerning the differences between regions in school type and performance. Such questions will be addressed in some depth in the next two rounds of the appraisal, starting with the district level and moving to the school level.

GUIDE FOR DISTRICT LEVEL MGT PROFILE

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GENERAL DESCRIPTION

The national/provincial level MGT profile provided a general overview of the prevalence of MGT in various regions as well as general features and performance levels of MGT schools. At this, the district level, the appraisal will focus on the context of MGT in selected locations, with the intention of generating both more and more specific ideas concerning the factors that influence the performance of MGT schools.
Our use of the term district here is to designate a political sub-division below the state or provincial level. Some countries may use this term, other may use a different one, like county or regency. Some countries, like the USA, do not always organize their schools along political boundaries (a school district may sometimes cover the same area as the political sub-division (a county), but not always. It is up to the appraisal team to decide the kind of sub-division that it would like to focus on.

SELECTION OF LOCATIONS

The level 1 appraisal will have already identified locations where MGT is prevalent. The first task for work at the current level will be to select appropriate locations for district-level analysis. The rapid appraisal principle of *triangulation* can help in the selection process. In rapid appraisals, investigators attempt in a relatively brief period of time, to generate information fit for decision-making. This generally rules out the use of formal surveys and randomized national samples. Thus, the investigators need to develop strategies for sampling a limited number of contrasting areas in order to make meaningful contrasts and comparisons. The principle of triangulation directs investigators to information-gathering in different locations representing contrasting points (usually three) on a continuum. It may be that the continuum represents certain outcome variables, such as performance/productivity indicators. Or it may represent geographical areas (coastal, plains, mountains) or cultural regions (colonial, indigenous, mixed). The critical point is to cover enough contrasting locations that appraisal will not be considered parochial.

The principle of triangulation is often used in a hierarchical manner, with certain selection rules applying at one level or round and others at the next. An example relevant to this appraisal would be to select three "high MGT prevalence" provinces for further appraisal based on geographical considerations (one in a remote coastal area, one in a lowland river system, and one in a mountainous zone) and then, within them, select three high prevalence districts based on school type (simple/hi load, complex/lo load, complex/hi load) or performance level (low, medium, high). The actual strategies will vary according to the salient features that define different regions in a country and the

quality of the data available (e.g., the data on performance in a certain country may not be of sufficient quality for it to be used as a classifier).

The examples in this guide assume a selection strategy of the kind above: namely two to three high MGT prevalence provinces from contrasting regions are selected first and within them one district is selected representing the following MGT school types: simple/hi load; complex/lo load; complex/hi load. The same kind of rapid appraisal would be done in each; after that, similarities and differences across the different districts would be sought. In the following example, the district level rapid appraisal methods are demonstrated using simulated data from Lake Hope District of the fictitious Province of Hopewell.

FORMING RAPID APPRAISAL TEAMS

In order to be effective, rapid appraisal teams should represent a partnership between persons from the central research and implementation units (those involved in the Level 1 analysis) and local educational officials (including, if possible, senior teachers) from the districts selected. These district teams will collaborate in compiling and analyzing appraisal data at this and subsequent levels of the MGT-RAP.

IDENTIFYING INDICATORS

This level of the appraisal is concerned with school performance in different types of MGT schools and the contextual factors which might influence it. Indicators of these concepts could be as follows:

Indicator of School Type. The indicator to be used here is Teacher Burden, the variable which combines grades per teacher and students per teacher (see Guide to National/Provincial Level MGT Profile). District level aggregates will have been used in the select of locations for further appraisal. In the selected districts schools will also be classified using this typology, namely Simple/Lo Load, Simple/Hi Load, Complex/Lo Load, Complex/Hi Load.

Geographic Environment. Indicators here includes the locations of villages and their schools and certain geographical features of the district such as the terrain, river systems, roadways, and communication networks.

Socio-economic Environment. This is a potentially complex domain. For this kind of appraisal, we recommended using a limited number of dimensions, including the

distribution of cultural/language groups in the district and different indicators of economic development. For the latter, it would be ideal if data on income per capita were available down to the village level. If this is not the case, it will be necessary to find or develop some other indicators. (Look for the use of such indicators in other studies, both in and outside of the field of education.) This might include the "typical" source of family income for the various towns and villages in the district and the average annual income from that source; the use of a pre-existing ranking scale of community development; or village level data on household durable goods (e.g., the percentage of homes having a refrigerator, TV set, or vehicle). If none of these are available, the appraisal team can do an informal rating of the level of economic development of towns and villages based on pooled subjective judgements of key informants.

School Performance Indicators. This includes data (aggregated at the school level) from educational records concerning participation rates of school age children (particularly the proportion of the most recent first grade age cohort entering school -- male and female); school averages on standardized examination that may have been used by district elementary schools (achievement tests, primary school leaving exams, secondary school entrances tests, and so forth.); and school drop-out rates for the latest year. As noted above, not all countries will have good indicators of this sort. This may mean that such assessments can only be done through new data collection at the school level (see Guide for School-Level MGT Profile). Also, achievement data of the kind that might be available rarely captures the most important outcomes of MGT schools, those related to the development of character (self-reliance and community-mindedness) and social skills. These points will be discussed in the section on school level analysis.

MAPPING OF THE INDICATORS

The most revealing way to portray the above indicators is to plot them on district maps. In addition, it is constructive to create various tables and scatterplots. The following will demonstrate a mapping of the schools of Lake Hope District, selected as mentioned above because of its high prevalence of MGT and high teacher burden. Before starting the mapping, a brief general "sketch" of the district should be made, such as the following:

Description of Lake Hope District

This fictional district represents an upland region with a relatively dense population. Its main feature is an upland, fresh-water lake. The lake is fed by three mountain rivers and drained by a fourth. It contains one small, populated island. The river valleys are flanked by rugged mountains. The bulk of the district's population live in towns and villages on the banks of the lake and the rivers that feed it. The district capital is on the lake at the

point where the drainage river begins. This is also the point where the highway from the provincial capital enters the district. This highway rings the lake and exits the district on the far end of the lake. The district is divided into four subdistricts, each having a capital city on the lake. There are a few scattered villages in the mountains beyond the district's four major valleys.

The inhabitants in the district can be classfied into one of three cultural-linguistic groups. The first is the dominant culture of the country, a group which speaks the national language as its mother tongue; this group inhabits the district capital and the larger towns and villages around the lake and in the valleys. The second is a group of relatively recent migrants from the nation's coastal region, drawn to the region by its relatively rich fishing grounds. It is related to the dominant culture and speaks a dialect of the national language. The third group consists of the indigenous hill tribes. They live in small mountain villages, practice slash and burn agriculture, and speak their own native language.

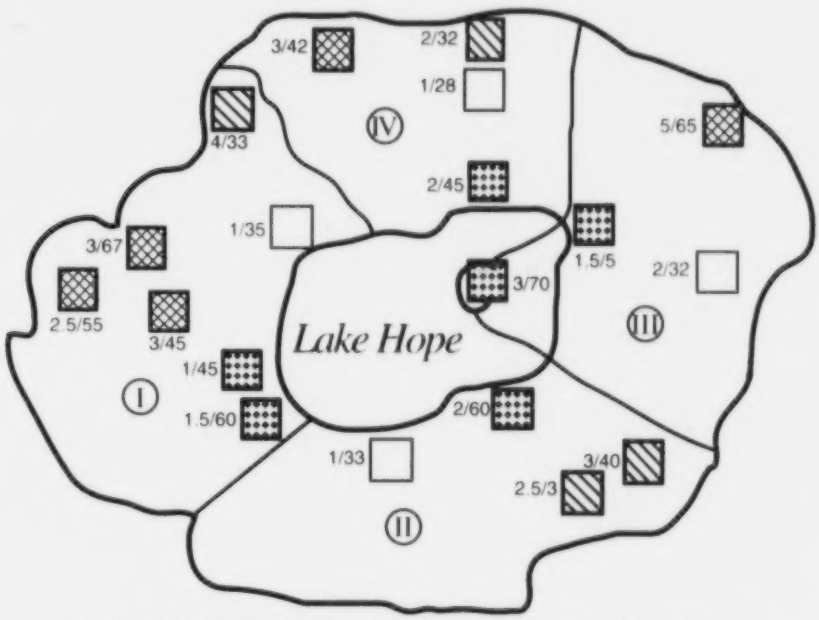
The district's economic conditions roughly reflect proximity to the district capital. The most prosperous region in terms of income per capita is the capital city and the larger towns at the drainage side of the lake. Other lakeside towns and many towns and villages in the valleys could be considered "semi-prosperous". Those in the mountains, the upper reaches of the valleys, and the island are classified as unprosperous.

Mapping Schools. Locating the schools on a district map with colors or symbols to designate their type represents a start toward understanding reasons for the diversity noted above. For this, it is advisable to make a large (approximately 3' by 3') map of the district (alternatively, a computerized map could be used if "mapping" or "paintbrush" software is available). Symbols or colors can be used to designate their Teacher Burden type. In addition, next to every school could be noted its actual grades per teacher and students per teacher (taken from Exhibit 2a).

Exhibit 2a: School Data for the Province of Hopewell: Lake Hope District

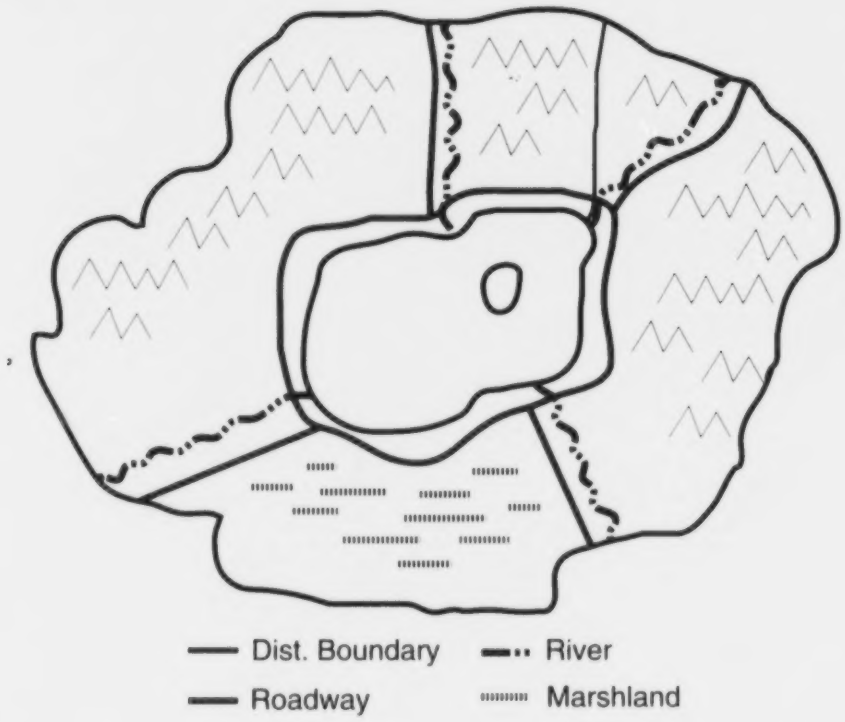
					INDEXES			
School	Classroom Teachers	Grades Taught	Students	Classrooms	Grades/ Teacher	Students/ Teacher	Teachers/ Classroom	Students/ Classroom
SubDist I								
101	4	6	240	6	1.5	60.0	0.7	40.0
102	6	6	270	3	1.0	45.0	2.0	90.0
103	6	6	210	3	1.0	35.0	2.0	70.0
104	2	6	90	2	3.0	45.0	1.0	45.0
105	2	5	110	2	2.5	55.0	1.0	55.0
106	2	6	134	1	3.0	67.0	2.0	134.0
107	1	4	39	1	4.0	39.0	1.0	39.0
SubDist II								
201	3	6	180	6	2.0	60.0	0.5	30.0
202	6	6	234	3	1.0	39.0	2.0	78.0
203	2	5	60	1	2.5	30.0	2.0	60.0
204	2	6	80	1	3.0	40.0	2.0	80.0
SubDist III								
301	4	6	208	6	1.5	52.0	0.7	34.7
302	3	6	96	3	2.0	32.0	1.0	32.0
303	1	5	65	1	5.0	65.0	1.0	65.0
304	2	6	140	2	3.0	70.0	1.0	70.0
SubDist IV								
401	3	6	135	3	2.0	45.0	1.0	45.0
402	6	6	168	6	1.0	28.0	1.0	28.0
403	2	6	40	1	3.0	20.0	2.0	40.0
404	2	6	84	1	3.0	42.0	2.0	84.0
Average	3.1	5.7	135.9	2.7	2.4	45.7	1.4	58.9

Exhibit 2b portrays the school map for Lake Hope District.



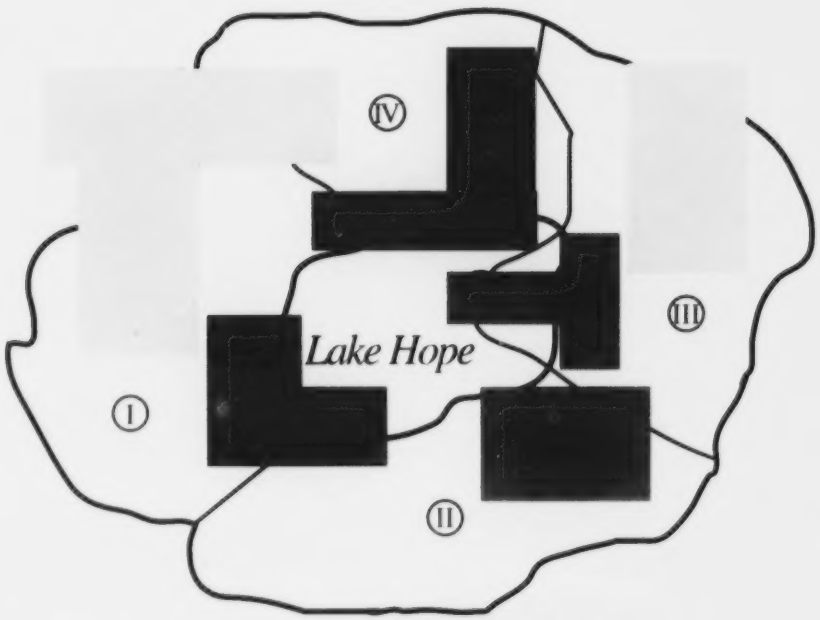
Interpretation note: This simple, unadorned map already shows some important distinctions. For example, most of the schools with simple curricular tasks are on the lake shore, while those with complex teacher tasks are in the interior. Teacher load, however, is high both along the lake and in the interior but probably for different reasons (see interpretation note under "Mapping the Geographic Environment".

Mapping the Geographic Environment. The salient features of the geographic environment need to be represented in the district profile. In the ongoing example, the feature selected are lakes and rivers, terrain (mountains, valleys, and marshlands), and roadways. Other indicators (not used in the current example) might be communication networks, electrification, and health services. These features are also placed on the map. In the example, they are put on an overlay through the use of drafting software (Microsoft Paintbrush) and a laser printer (See Exhibit 2c.) Placing the schools in this environmental context reveals some of additional explanations for the unequal distribution of students and teachers.



Interpretation note: The simple/low load schools are all on main roads but not at major intersections. Most of the simple/high load schools are near the lake at the places where rivers either enter or drain it and where valley roadways meet the highway circling the lake. The complex/low load schools are usually located away from the lake shore, sometimes in the mountains, sometimes along valley roadways. Most of the complex/high load schools are located in the mountains (or on an island) at some distance from roadways. This simple analysis seems to indicate that teacher burden in Lake Hope District appears in two contexts: on the lake shore in larger towns, where it appears that schools have not expanded to accommodate a growing number of students; in the maintains away from the roadways, where it is difficult to place and hold teachers.

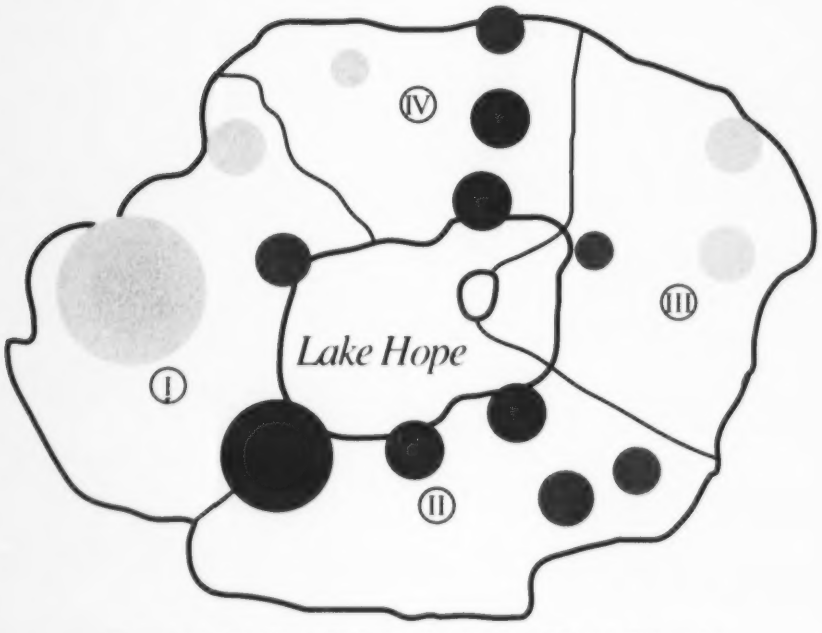
Mapping Socio-economic Environment Variables. A full mapping of social and economic variables would require an extensive set of maps and charts. A rapid appraisal suggests focusing on a few factors that impinge in various ways on the main object of the appraisal. Two that are clearly critical as a context for MGT are *cultural-linguistic environment* (especially as revealed in the languages that students and teachers bring to the classroom) and *community economic well-being* or *level of prosperity*. Such factors can also be plotted on a district map.In this example, they are plotted on a pair of overlays (see Exhibits 2d and 2e). In the former, the cultural linguistic regions are designated by "belts". In the latter, each town or village's level of prosperity is indicated by a particular pattern. Both of these maps can also be printed out on transparencies and used as overlays on the school map with its geographic overlay.



Cultural Profile of Lake Hope District

Mainstream Culture (National language)
Costal Migrants (Nat'l. lang. Dialect)
Hill Tribes (Indigenous lang.)

Interpretation notes: These profiles reinforce many of the points made in the geographic profile. The schools with the heaviest teacher burdens are all in the least prosperous areas; most are also located where the Hill Tribes are predominant. The simple/high load schools are almost all in the prosperous zones, which are dominated either by the mainstream culture/language or those of the coastal fishing groups. The scenario appears to be one in which both students and teachers are attracted to the relatively prosperous towns. The high load factors there are probably because of the system's failure to keep up with expansion. In contrast, the poverty and linguistic insularity of the mountainous regions is a barrier to finding and holding teachers. Cultural and linguistic barriers also presumably make it difficult for youth from these areas to attain the education they need to qualify as teachers. Since such explanations are speculative at this point, it would be advisable to pursue them in the school-level profile activity.)

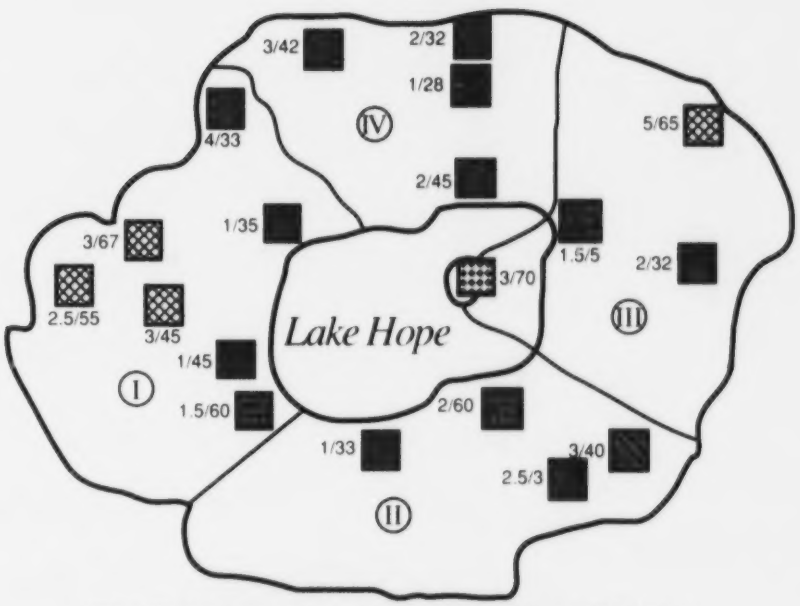


Economic Conditions in Lake Hope District

Prosperous Semi-prosperous Least prosperous

Mapping Indicators of School Performance. Indicators of school performance, such as age-cohort participation rate, student achievement, and school drop out rates, if available in district or provincial educational offices, can be summarized and mapped in a manner similar to the above. These indicators can be broken into categories (e.g., high, medium and low) and then represented on the map through colors assigned to different schools. *If it turns out that there are no valid indicators of school performance kept by the education system, this activity will have to be deferred until the school-level appraisal.*

Returning to the Lake Hope example, Exhibit 2f shows the original schools, but this time they are color-coded in a way that shows average performance of their students on standard examinations.



The Primary Schools of Lake Hope District

Simple/ Low Load | Simple/ High Load | Complex/ Low Load | Complex/ Low Load

High Performance | Medium-Level Performance | Low Performance

Interpretation. This map can be used together with the various overlays to suggest ways in which contextual factors and school type influence school performance. This would be a good time to generate some hypotheses for testing using the results of appraisals in other districts and in the appraisal at the next level, the school-level profiles. Based on the Lake Hope simulation, some hypotheses might be:

- the higher the teacher burden, the lower the school performance;
- students in classrooms with high curricular complexity do just as well as those in classrooms with low curricular complexity, as long as the student load is low, and on some outcome measures (e.g., social and affective) they may do better;
- teacher burden is highest in remote areas where it is difficult to attract and hold qualified teachers;
- teacher burden may also be quite high in high population growth areas and may result from a school system not keeping pace with population growth;

- teacher burden and school performance are both related to cultural factors: unless there are teachers originating in ethnic minority areas, schools in these areas will have a difficult time attracting and keeping qualified teachers, and students will have difficulty dealing with cultural and language gaps.

Investigators are encouraged to develop additional hypotheses for the above simulation (as an exercise) and a full set in connection with their own district profiles.

COMPARING THE PROFILES OF DIFFERENT DISTRICTS

Once profiles are constructed for each of the target districts, it is crucial that they be examined and compared. The following are the kinds of things to look for during this comparison: the similarities and differences among the districts in the

- extent of variation in MGT school types;
- apparent relationship between MGT school types and geographic, socio-cultural, economic factors, and general explanations for variations in MGT school type;
- apparent relationship between MGT school type and school performance indicators;
- apparent relationship between school performance and contextual variables.

It is hoped that these comparisons will reveal certain patterns within and between districts. These patterns can be elaborated in the form of hypotheses and used to guide the selection of variables (called sub-topics) in the school-level appraisals.

GUIDE FOR SCHOOL-LEVEL MGT PROFILE

GENERAL DESCRIPTION

The first two levels of this rapid appraisal sought to determine the prevalence and locus of multigrade teaching and to view it in a general social and organizational context. Among other things, those stages helped to identify different kinds of schools based on the concept of teacher burden and, if possible, higher-(and lower-) than-expected school performance. The present analysis of the school-level MGT profile will be used to explore possible explanations for different levels of school performance and to identify the problems and needs of MGT schools. Results at this level, together with those at other levels, can be used in planning intervention strategies and possible project components.

SELECTION OF SCHOOLS

School selection is a critical aspect of this phase of the appraisal. Since the objective is to appraise the performance and problems of MGT schools, it would be advisable to select schools representing different regions, school types and performance levels (see Figure 1). The principle of triangulation can be employed again--this time in a hierarchical manner. At the first level of the hierarchy, at least three districts are selected representing different points on a spectrum of geographical or socio-cultural conditions. At the second level, different school types are selected. In the on-going example, one would use the concept of teacher burden and select at least one school representing each type: Simple/Hi Load, Complex/Lo Load and Complex/Hi Load. (Simple/Lo Load could be made optional since it is very close to a conventional school and thus could be seen as "control group.") Finally, if performance data is available, the sample could be further stratified by sampling at least one high performance and one low performance school from each school type. The maximum number of schools under this sampling plan would be 24:

2 schools per type x 4 types of schools x 3 districts

If time and resources don't allow for this size of sample, it could be reduced in two ways: (a) by eliminating the control group (this would cut the number to 18) and (b) by not stratifying by performance level (this would mean selecting only one school per type, yielding 3 to 4 schools per district instead of 6 to 8). If school level performance data is not available in any case, the latter would be the only alternative possible, unless local school officials and other key informants can be called upon to do a reliable job sorting schools on this dimension.

A sample framework such as that below still does not indicate which school to visit. It is up to the team, with the help of local informants, to select one school in each category. In case that school does not work out for some reason, it would be a good idea to select an alternate as well.

Figure 1. Possible School Sample Framework for School-Level MGT Appraisal

District	School Type	Performance Level
District 1	1. Simp/Hi Load	High
		Low
	2. Comp/Lo Load	High
		Low
	3. Comp/Hi Load	High
		Low
	4. Simp/Lo Load [optional, as a control group]	High
		Low
District 2	1. Simp/Hi Load	High
		Low
	2. Comp/Lo Load	High
		Low
	3. Comp/Hi Load	High
		Low
	4. Simp/Lo Load	High
		Low
District 3	1. Simp/Hi Load	High
		Low
	2. Comp/Lo Load	High
		Low
	3. Comp/Hi Load	High
		Low
	4. Simp/Lo Load	High
		Low

ORGANIZATION OF RAPID APPRAISAL TEAMS

As in the district-level appraisal, it is important that the appraisal teams represent different perspectives and disciplines. Members should include both outsiders (those not from the districts where the field work will be conducted) and insiders (local school personnel from each district). The team should reflect a partnership between the central research staff and local school personnel. It would be best for one group of three to cover all districts. If this is not possible given time constraints, different sub-teams could be formed for each district, with the provision that they all work together in developing/modifying the research questions and meet frequently to discuss developments in the field. Attempts should be made to include experienced investigators, already skilled at rapid appraisal techniques (or different forms of qualitative or case study research) since they will be able to work with less detailed guidelines and specification than less experienced investigators. Local personnel are included because of their familiarity with local conditions and customs and their ability to relate comfortably to teachers and community members at the village level. Both central staff and locals should be involved in all aspects of the field work: finalizing the list of questions to be asked, making observations and conducting interviews, adjusting questions, discussing, and writing up observations and findings.

IDENTIFYING APPROPRIATE SUB-TOPICS FOR THE SCHOOL PROFILE

Using the results of the district level profiles and drawing upon other reports, information, and previous experience, the investigators should begin to generate hypotheses concerning the reasons for different performance levels in MGT schools and the problems that might be experienced by MGT schools and teachers under different circumstances. These discussions should lead to the listing of different study questions or "sub-topics." At the initial stages of the investigation, the sub-topics should be left quite general. Field observations and initial interviews should be used to suggest new sub-topics and more detailed questions. Sub-topics and questions should become a matter of discussion among investigators and, once agreed upon, should form the basis of a new "iteration" of interviews and observations. Some possible sub-topics for school-level MGT appraisal could be:

- the experience and turnover of the teachers (how many years have they spent doing MGT and how long have they spent at this school?);

- cultural diversity among students and teachers and the extent to which there is a match between student language and that of the teacher;
- the availability and use of resources (conventional, such as textbooks, as well as non-conventional such as peer-tutors, self-instruction, and community volunteers);
- the ability of teachers to keep children of diverse grades, ages and abilities "on task" during the school day;
- unique MGT organizational patterns, student grouping systems, schedules and routines;
- teacher support systems (within-school relationships among the teachers and principal, supervision, in-service training, school-community organizations).

In order to maintain flexibility and openness to change and adjustment, the sub-topics should be taken to the field in their general form. Questionnaires or formal interview guides should *not* be used.

THE SCHOOL VISIT

With these sub-topics in hand, investigators should plan their visits to the selected group of schools. The district educational office will often need to be contacted in advance for permission to visit the schools. But it would be best not to give the schools advance notice, since this almost guarantees a visit filled with atypical (and exemplary) activities and accomplishments. Unless local protocol makes this impossible, the team should avoid being accompanied to the schools by local school and government officials.

It would be best for the team to spend an entire day at a single school, meeting with and interviewing teachers and principals before and after instructional time and observing school and classroom activities during it.

School Observation. A record of school observation should include a "daily activity record" of each teacher, describing the groups they met with, the duration of the meeting, the content of and approach to the lesson, the resources (books,

materials, resource persons) used, and the attentiveness and behavior of the learners. The record should also contain any activities outside of the classroom, and those which involve the entire schools or more than one teacher's assigned grades. At the end of the day a full narrative description should be composed with contributions from all members of the team. On the next page is an example of the kind of narrative that could be written. It comes from an actual MGT school visit in Belize, Central America.

VISIT TO A MULTIGRADE TEACHING SCHOOL IN BELIZE

"One component of the study included identification and observation of schools which had established — on their own — particularly effective forms of multigrade teaching, so that their experiences and methods could be documented, legitimized and made available to others. We had the chance to spend a day in one such school: a one room school at Willow's Bank, in the Republic of Belize, Central America. The school has 77 students distributed across two levels of kindergarten and 6 primary grades. It has two teachers, who have been there for 16 years and 12 years, respectively. The two kindergarten levels and grades one and two are clustered around the teacher at one end of the long room; grades three through six are clustered around the second teacher at the other end. In one corner of the building is a small library and activity center. During one hour the teacher set things up so that the preschoolers were helping each other with word recognition, while the first graders were working at their seats on math problems which had been written on the blackboard. The second graders were playing a spelling game led by one of their group members. At the other end of the room, the teacher had the third graders solving math problems on the blackboard, the fourth graders reading a story, and the fifth and sixth-graders working together on a geography assignment. He moved smoothly and continuously from one group to another, giving encouragement, correcting mistakes, and answering questions. The amazing thing about this classroom was that 100% of the students were engaged in their tasks, and that six different lessons were going on at the same time." *H.D. Nielsen, "Working on the Last Frontiers of Education for All," The FORUM for Advancing Basic Education and Literacy, Vol. 1, No. 4, May, 1992.*

Student Performance Assessment. If it has not been possible to obtain some kind of standard achievement score for the school's students from the educational office or the school itself, it would be advisable to bring a set of brief diagnostic instruments (perhaps covering some basic math and reading skills) that could be administered on the spot to all students (if it's a small school) or at least to one or two grades (e.g., third and sixth).

Semi-structured Interviews. Most of the school profile information will be gathered through "semi-structured" interviews of school personnel. This means that the interviewers(usually three: two from the central office and one local collaborator) will visit the schools equipped with a list of general questions or sub-topics to cover, but without a precise script. The exact working of questions related to the topics will be made on the spot during the course of the interview. In addition, this should be a time for investigators to ask questions about their observations (e.g., the extent to which that day's activities reflected a typical day). Since most of the MGT schools to be visited have small staffs of 3-4 teachers, a group interview would generally be appropriate. In most cases it would be best to limit the group to the core staff of the school, although at times curious and informed community members might join in. In general, however, it would be best to pay a separate visit to key community members in order to elicit their views on certain of the study questions (or to follow new information trails which may have opened during the course of the visit).

A "protocol" for the interview should be made by the investigators in advance. This consists of the approaches to be taken and rules to follow. Such a protocol would generally include points such as:

- The interview should be friendly and informal. It should begin with casual talk about matters of common interest and a brief explanation concerning the purpose of the appraisal.
- Sub-topics should be covered according to a pre-established logical sequence. For example, it may be that some topics should be covered in the morning before the start of classes and others at the end of the day, after the interviewers have had a chance to observe classrooms.
- Interesting digressions and following new information trails should be allowed, but when they have played out, the group should return to the planned sequence.

- Each interviewer, in turn, should have a chance to pose a question or questions concerning the sub-topic. While one interviewer is pursuing a question or series of questions, the other interviewers should not interrupt.

- Interviewers should respond to brief, vague, or incomplete answers by "probing." This often means asking "who, when, what, where, why, and how" questions.

- Each interviewer should take notes on the total conversation.

If during interviews at the first few schools significant new lines of questions (including new sub-topics emerge), it would be advisable to start a new iteration, returning to schools already covered for the new information.

For further information about the conduct of semi-structured interviews within the context of Rapid (Rural) Appraisals see, S. W. Grandstaff and T.B. Grandstaff, "Semi-structured Interviewing by Multidisciplinary Teams in RRA," in Proceedings of the 1985 International Conference on Rapid Rural Appraisal. Khon Kaen University, Thailand: Rural Systems Research and Farming Systems Research Projects, 1987.

Teacher Personal Histories. In most education systems where MGT is prevalent teachers have, at least until recently, received little or no preparation for their complicated tasks. A few teachers in every system have approached their assignments as a special challenge and have managed not only to cope but to thrive. Many have been extremely resourceful and innovative. Unfortunately, since they are far removed from the mainstream, their innovations and resourcefulness often goes unrecognized and undocumented and their influence unfelt except among their closest neighbors. Personal histories of such teachers is a medium for documenting the "inventions" of such teachers as well as their coping mechanisms (their processes of adapting to their challenging environments).

Each district in the study is likely to contain a few extraordinary MGT innovators or "master multigrade teachers." Investigators will need to enlist the help of district educational officers and fellow teachers in identifying them. (In some cases they may be found at the locations selected for school visits.) Once contacted they should be interviewed and invited to write a brief "personal history" of their service as a multigrade teacher. Some points that might be covered in such as history are the following:

- how they felt when they first began to teach in a school requiring MGT and the kinds of problems they experienced at the beginning;
- the kinds of supports they found at the school and community (if any);
- how they went about adapting to their environment;
- the different kinds of instructional approaches they tried out as well as what worked well and what didn't;
- examples of their accomplishments and the accomplishments of various school participants/graduates;
- the lessons they would like to pass on to new teachers assigned to MGT.

These histories should be collected and used together with school profiles to suggest patterns of good (and bad) multigrade teaching.

SUMMARY AND REPORT WRITING

At the end of a day's observing and interviewing the individual team members should write up and compare their observations ("daily activity record") and interview notes, and, if applicable, score any tests administered. Differences in perception and interpretation among group members should be reconciled at this time. After that, a single, complete narrative profile of the school should be written, covering the observations, interviews (including those of community informants, if used), and (optionally) test results.

GUIDE FOR SUMMARY PROFILE ANALYSIS AND INTERPRETATION

PROFILE ANALYSIS WORKSHOP

Once profiles for all schools in the sample are completed and personal histories collected, a workshop should be convened involving all appraisal team members, some or all of personal history writers, and other stakeholders (district, provincial, and national educational officers, teacher educators, curriculum and textbook developers, and others). The purpose of such a meeting is to review district and school profiles and teacher histories in order to identify patterns in the data which can be used to answer the appraisal's main questions (for example, the problems and needs of MGT schools and the factors influencing student/MGT school performance). The search for patterns should take into consideration the following questions:

- Are there any systematic ways in which high performance MGT schools differ from low performance?
- In what ways, if any, do the different types of schools differ in terms of their problems and needs?
- Are there any systematic differences among the different districts?
- Are there any problems and needs common to all of the MGT schools, irrespective of performance level, type or locations?
- How do school-level variables appear to interact with broader contextual variables such as those identified in the district-level appraisal?

FORMULATING RECOMMENDATIONS FOR PROJECTS OR OTHER INTERVENTIONS

Once there is general agreement on the patterns in the data, the group could proceed to develop a set of recommendations concerning possible government interventions for strengthening multigrade teaching. Some questions to consider during such a discussion would be:

- Which of the problems identified are amenable to change or "manipulation" (e.g., teacher qualifications or training) and which are not (e.g., geographic conditions)?

- Which of the manipulable variables are under the control of the educational system and which are not? (For the latter, stakeholders from other ministries of departments may need to be brought in)?

- Are any changes envisioned applicable to all types of MGT schools or only a subset?

- What would any changes require in terms of:
  - new budget allocations?
  - organizational changes?
  - personnel changes?
  - policy adjustments (including changes in rules and regulations)?
  - staff training or retraining?
  - evaluation and feedback?

- What changes are needed at the school level, and what at the district, provincial and national levels?

- To whom should the recommendations be directed, when, and in what form?

CONCLUSION

This rapid appraisal methodology is meant to provide a first round of insights into the implementation of multigrade teaching in a country or region. Being a relatively *efficient* form of research (revealing much over a brief period of time), the methodology can provide timely inputs into certain decision processes, such as the design of new interventions or policies. The methodology should also reveal problems and issues needing further investigation, either using the same approaches in new regions or with new questions, or using other methods (e.g., in-depth observations, surveys, or field experiments). Since concern for the quality and effectiveness of multigrade teaching is relatively recent, it will take several rounds of appraisals, project development efforts, and further appraisals before children in remote, rural areas are provided the quality of education that they have a right to.